1   What is claimed is:

2   1. A method for processing multi-channel audio signals, comprising:

3   determining the degree of correlation of two of the channels;

4   responsive to a determining that said two channels are correlated, normalizing

5   said channels according to a first normalization mode; and

6   responsive to a determining that said two channels are uncorrelated, normalizing

7   said channels according to a second normalization mode.

8   2. A method for processing multi-channel audio signal in accordance with claim

9   1, wherein said first normalization mode is a differential mode.

10   3. A method for processing multi-channel audio signals in accordance with claim

11 2., further comprising determining the phase relationship of said two channels

12   4. A method for processing multi-channel audio signals in accordance with claim

13 3, responsive to a determining that said two channels are substantially out of phase, said

14 differential mode is difference signal dominant.

15   5. A method for processing multi-channel audio signals in accordance with claim

16 3, responsive to a determining that said two channels are substantially in phase, said

17 differential mode is sum signal dominant.

18   6. A method for processing multi-channel audio signals in accordance with claim

19 1, wherein said second normalization mode is a common mode.

20   7. A method for processing multi-channel audio signals in accordance with claim

21 6, further comprising the step of determining an absolute value of a sum signal of said

22 two channels and an absolute value of a difference signal of said two channels.

23   8. A method for processing multi-channel audio signals in accordance with claim

24 7, responsive to a determining that said absolute value of said sum signal is greater than

25 said absolute value of said difference signal, said common mode is sum signal dominant.

26   9. A method for processing multi-channel audio signals in accordance with claim

27 7, responsive to a determining that said absolute value of said difference signal is greater

28 than said absolute value of said sum signal, said common mode is difference signal

29 dominant.

30   10 A method for processing multi-channel audio signals, comprising:

31   determining the degree of correlation of two of the channels;

32   responsive to a determining that said two channels are partially correlated and

33   partially uncorrelated, processing said channels according to a combination of a first

34   normalization mode and a second normalization mode.

35   11. A method for processing multi-channel audio signal in accordance with

36   claim 1, wherein said first normalization mode is a differential mode.

37   12. A method for processing multi-channel audio signals in accordance with claim

38   1, wherein said second normalization mode is a common mode.

39   13. A method for processing multi-channel audio signals in accordance with

40   claim 10, wherein said combination is a linearly weighted combination of said first mode

41   and said second mode.

42   14. A method for processing multi-channel audio signals in accordance with claim

43   13, wherein said first mode is a differential mode and said second mode is a common

44   mode.

45   15. A method for decoding an encoded multi-channel audio signal, comprising:

46   determining the correlation of a first channel and a second channel;

47   processing said first channel and said second channel to produce a third channel

48   and a fourth channel.

49   16. A method for decoding in accordance with claim 15, wherein responsive to a

50   determining that said first channel and said second channel are uncorrelated, said third

51   channel and said fourth channel are substantially uncorrelated.

52   17. A method for decoding in accordance with claim 15, wherein responsive to a

53   determining that said first channel and said second channel are substantially correlated,

54   said third channel and said fourth channel are substantially correlated.

55   18. A method for decoding an encoded multi-channel audio signal in accordance

56   with claim 15, further comprising determining an absolute value of a sum of said first

57   channel and said second channel.

58   19. A method for decoding an encoded multi-channel audio signal in accordance

59 with claim 18, wherein, responsive to said absolute value of said sum signal being greater

60 than said absolute value of said difference signal, said third channel and said fourth

61 channel are substantially correlated.

62   20. A method for decoding an encoded multi-channel audio signal in accordance

63 with claim 18, wherein, responsive to said absolute value of said difference signal begin

64 greater than said absolute value of said difference signal, said third channel and said

65 fourth channel are substantially uncorrelated.

66   21 An apparatus for processing multi-channel audio signals, comprising:

67   an input characteristics determiner for determining a degree of correlation of two

68 of the channels;

69   a first normalizing multiplier, coupled to said input characteristics determiner, for

70 applying a first normalizing coefficient to a first of said two channels, said normalizing

71 coefficient being responsive to said degree of correlation; and

72   a second normalizing multiplier, coupled to said input characteristics determiner,

73 for applying a second normalizing coefficient to said second signal, said normalizing

74 coefficient being responsive to said degree of correlation.